Myriapodologica

A SERIES OF OCCASIONAL PAPERS PUBLISHED AT RADFORD UNIVERSITY

ISSN 0163-5395

Vol. 2, No. 7 July 15, 1988

Sphalmatogonus, a genus of Japanese diplopods (Polydesmida: Paradoxosomatidae)

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ABSTRACT

Sphalmatogonus carli, an obscure species of milliped heretofore known only from the original type series labeled "Sumatra" is reported from the island of Kyushu, Japan. Two other species from Japan, both described in *Haplogonosoma* by Takakuwa in 1942, are clearly congeneric with *carli,* and it is suggested that the "Sumatra" record is the result of either accidental introduction or mislabeling; *Sphalmatogonus* must be regarded as an endemic Japanese genus of paradoxosomatids.

NARRATIVE

In 1902 the Swiss zoologist Jean Carl recorded, and illustrated the gonopod structure of, a milliped in the Geneva Museum which he identified as *Strongylosoma subalbum* Pocock, 1894. Despite appreciable concurrence of his specimen with Pocock's description, such an identification could only be regarded as highly provisional, as the type and only known specimen of *subalbum* was a female and since Pocock's description was not sufficiently detailed to begin with.

Subsequently the species identified by Carl as *subalbum* was referred by Brolemann (1916) to his new genus *Haplogonosoma*, an allocation adopted also by Graf Attems in 1937, although neither of these authors restudied Carl's specimen. Such an examination, finally conducted by C. A. W. Jeekel in 1976, disclosed that the original interpretation of gonopod structure was incorrect. In his detailed account of this specimen, Jeekel (1980) showed that the species could not be correctly placed in *Haplogonosoma* or any other known genus and moreover, since it was highly improbable that it was conspecific with *S. subalbum* sensu Pocock, he renamed it as *Sphalmatogonus carli.*

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By an interesting coincidence, not long after the appearance of Jeekel's paper, I was identifying some Oriental diplopods loaned for study by the California Academy of Sciences and came upon a vial of specimens obviously referable to *S. carli,* agreeing in every detail with Jeekel's description and drawings. This discovery raised a point of some interest, as the material had been taken on Kyushu island, Japan, whereas the types of *S. carli* were labeled only "Sumatra" without further data. Was Carl's material mislabeled, or was it possible that *S. carli* was transported to Sumatra from Japan, or vice versa?

Fortunately, it is possible that the question can be settled through circumstantial evidence. One of the anatomical features which sets *Sphalmatogonus* off as a disjunct taxon is the presence of a prominent digitiform lobe on the ventral side of the gonopod prfemur, a peculiarity remarked by Carl in 1902, and shown in his drawing of the gonopod. This process is unique within the entire family *Paradoxosomatidae.*

In a second coincidental event, soon after my discovery of the Kyushu specimens of *carli,* I happened to be looking through Takakuwa's 1954 book on Japanese millipeds, in connection with quite a different subject, when my attention was suddenly captured by the illustration (Fig. 20) given for *Haplogonosoma silvestre* Takakuwa. A very close similarity was noted between this gonopod drawing and that published by Jeekel for *carli,* including the prefemoral projection and the erect lamina at distal end of the postfemur. Although the tibiotarsal region of *silvestre* is much longer and differently coiled, there can be little doubt that this species must be referred to *Sphalmatogonus* as its second member.

The type locality for *H. silvestre* was stated to be "Yoshida (am Fusse des Berges Huzi)" which I presume is the place now called Fuji-yoshida in southeastern Yamanashi Prefecture (35,28N, 138.42 E) on the northern base of Mount Fuji-san.

The California Academy specimens are labeled "Moji, Kyushu, Japan, IV-28-34" and were collected by J. Linsley Gressitt. Moji no longer appears on most maps, having been incorporated into a metropolitan area now called Kitakyushu. Dr. Gressitt advised me (by letter dated 5 April 1982) that the millipeds were probably taken at the edge of a wooded city park area.

S. carli has been thoroughly described and figured by Jeekel (1980). I can add only one anatomical detail in gonopod structure, the presence of a small, acute projection on the lateral side of the postfemoral region, as shown in Fig. 2. Because of its location, and concealment in lateral aspect by the proximally curved loop of the tibiotarsus, this projection is only evident in an oblique ventrolateral aspect and I happened to notice it only be accident. Jeekel's Fig. 20 is made from an aspect which does not show the apex of the tibiotarsus clearly (it being curved almost directly toward the observer); my Fig. 1 is made from a slightly different orientation to show the distal part of the solenomerite running along the mesal surface of the tibiotarsus, beyond which it projects slightly.

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In setting up Sphalmatogonus, Jeekel referred it to the tribe Orthomorphini. While I should be the last to express any doubts about the validity of this assignment, I might note the strong similarity in gonopod structure to genera of the tribe Eustrongylosomatini, a similarity that is substantiated by a parallel reduction in size of the paranota.

The literature references for the three species here recognized as congeners within Sphalmatogonus are cited herewith:

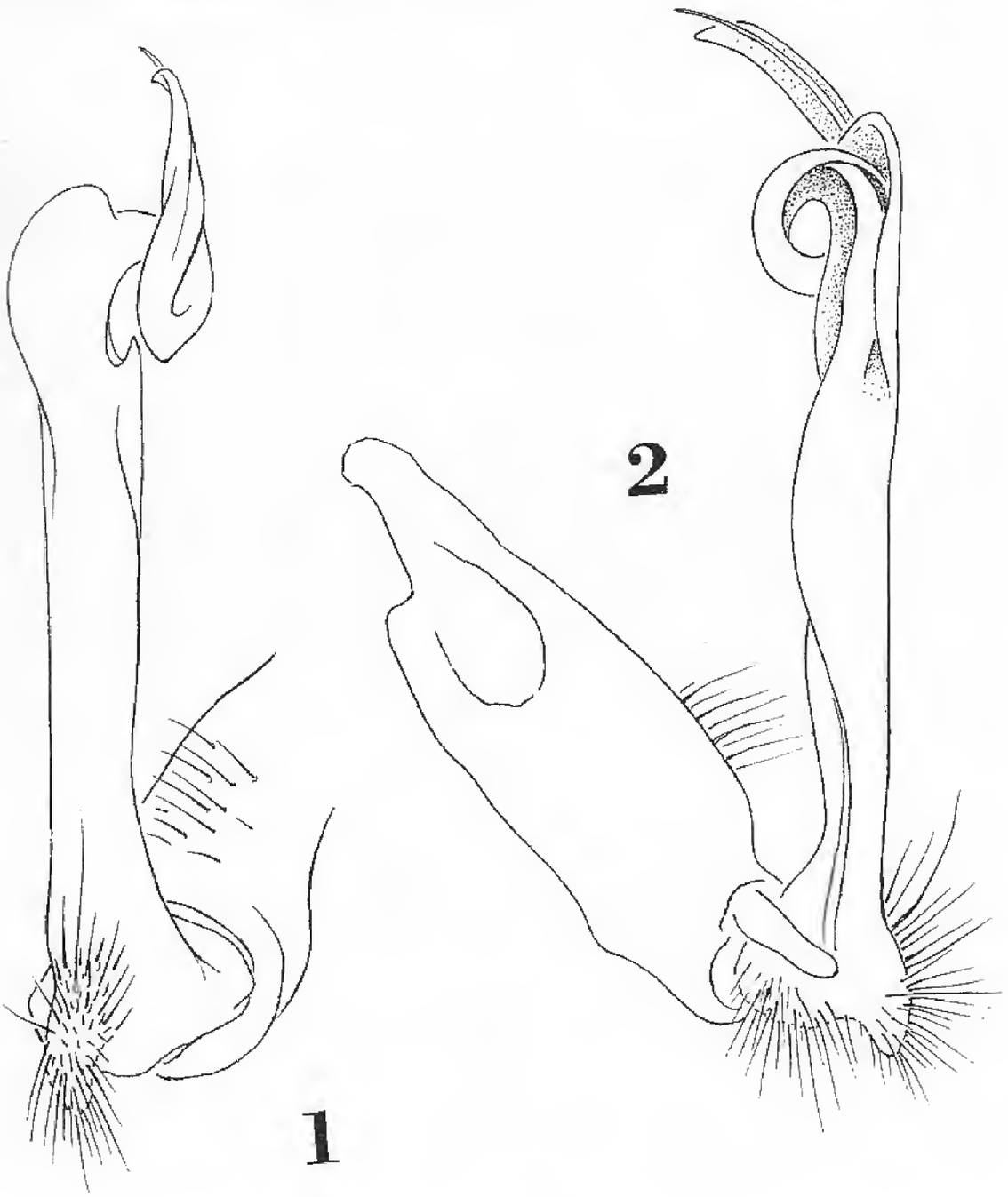

Fig. 1. *Sphalmatogonus carli* Jeekel. Left gonopod, mesal aspect, of male from Kitakyushu, Japan. Fig. 2. The same gonopod, oblique ventrolateral aspect.

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Sphalmatogonus carli Jeekel. — Figs. 1, 2.

Strongylosoma subalbum (nec Pocock, 1894) Carl, 1902, Rev. Suisse Zool., v. 10, p. 566, pl. 10, fig. 12 ("Sumatra").
Orthomorpha subalba: Attems, 1914, Arch. Naturg., v. 80(A)4, p. 194.
Haplogonosoma subalbum: Brolemann, 1916, Ann. Soc. ent. France, v. 84, p. 592.
Sphalmatogonus carli Jeekel, 1980, Rev. Suisse Zool., v. 87, p. 338, figs. 19, 20.

Sphalmatogonus silvestre (Takakuwa), comb. nov.

Haplogonosoma silvestre Takakuwa, 1942, Annotat. Zool. Japonenses, v. 21, p. 44, fig. 9 (Yosida, am Fusse des Berges Huzi). — 1954, Diplopoda of Japan and surrounding regions (in Japanese), p. 28, fig. 20.

Sphalmatogonus dichotomus (Takakuwa), stat. & comb. nov.

Haplogonosoma silvestre dichotomum Takakuwa, 1942, Annotat. Zool. Japonenses, v. 21, p. 45, fig. 10 (Japan, without precise locality).

The original description of this taxon specified structural agreement with nominate *silvestre* in all points except gonopod structure. As schematically illustrated, this appendage has the postfemoral elements more tightly coiled with the lamina lateralis of the tibiotarsus broader basally, but more elongated distally, than in either *carli* or *silvestre;* distal lobe of femorite broader and more truncate than in the other two species. I think there is little reason to doubt *dichotomus* merits full specific status. Regrettably we remain ignorant of its range in Japan; most probably it occurs in central or western Honshu.

Takakuwa's original illustration contains an inaccuracy, in that the course of the prostatic groove is shown by a dotted line to extend along the tibiotarsus, instead of the smaller and thinner solenomerite.

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Carl, J., 1902. Exotische Polydesmiden. *Rev. Suisse Zool.,* v. 10, pp. 563-679, pls. 10-12, figs. 1-109.

Jeekel, C. A. W., 1980. On the classification of some little known Paradoxosomatidae from Java and Sumatra (Diplopoda, Polydesmida). *Rev. Suisse Zool.,* v. 87, pp. 323-340, figs. 1-20.

Pocock, R. I., 1894. Chilopoda, Symphyla, and Diplopoda from the Malay Archipelago, in: M. Weber (ed.), Zoologische Ergebnisse einer Reise in Niederlandisch Ost-Indien, v. 3, pp. 307-404, pls. 19-22.

Takakuwa, Y., 1942. Zur Kenntnis der Japanischen Diplopoden. *Annot. Zool. Japonenses,* v. 21, pp. 39-47.

——— , 1954. Diplopoda of Japan and surrounding regions [in Japanese], pp. 1-241, figs. 1-253.

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